WARNING

Because of possible shock or fire hazards, connection of this instrument should be performed in compliance with National Electrical Code (ANSI C1) and/or any other requirements which may be applicable to the user.

Installation, operation, and maintenance should be performed only by qualified personnel.

TM-110280-1U

VOLUME 1

OPERATOR'S MANUAL

626-PA-6007

EVENT MONITOR

Note Refer to Volume 2 (Service Manual) of TM-110280-1U for maintenance data.

1 May 1984
(Revised 1 July 1984)

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DRANETZ

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626-PA-6007 EVENT MONITOR

1 INTRODUCTION

This manual provides operating instructions for the 626-PA-6007 Event Monitor Plug-in, hereinafter referred to as the 6007. The 6007 is designed for installation in the Model 626 Universal Disturbance Analyzer. It is assumed that the reader is familiar with the mainframe information presented in TM-106650U.

2 PURPOSE

The 6007 monitors the state of up to 8 inputs. It senses, identifies and records, in a convenient alphanumeric printout, rapid state changes of such inputs as electromechanical or solid-state relays with a response time of 1 millisecond. The 6007 provides highly accurate and reliable time sequence information, even from extremely noisy sources.

3 EQUIPMENT CHARACTERISTICS

The 6007 is configured as a plug-in module 6.5" high by 1.25" wide by 10" deep. It is designed for installation in any of the five slots of the Model 626 Universal Disturbance Analyzer. Technical specifications of the 6007 are listed in Table 1.

Table 1. 626-PA-6007 Technical Specifications

No. of Channels	8
Input	2 wire differential Z_{in} = 1 Megohm min (each side to ground)
Normal differential input for "high" input state	5-25 VDC
Common mode voltage	±200V DC max with respect to earth ground
Min. Validation Time	5 mSec, 10 mSec, 20 mSec, or 320 mSec (programmable)

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4 INSTALLATION

To install the 6007 in the mainframe, proceed as follows:

CAUTION: Be sure that the 626 is turned off and that all power connected to all the plug-in modules is turned off.

a. Position the top and bottom front corners of the plug-in module in the upper and lower tracks at the desired slot position at the rear of the mainframe.

b. Carefully slide the module into the mainframe until it is firmly seated.

c. Tighten the top and bottom captive screws to secure the module to the mainframe.

5 CONNECTING INPUT CHANNELS

5.1 Connection Procedure

The 6007 is equipped with eight 3-pin connectors installed at the rear of the module. The input leads must be wired to the mating connectors supplied with the module, observing the polarity as marked on the rear panel. Attach each wired mating connector to the corresponding (1-8) rear pannel connector.

CAUTION: To avoid damaging the equipment, do not apply DC voltages in excess of 200V to the 6007.

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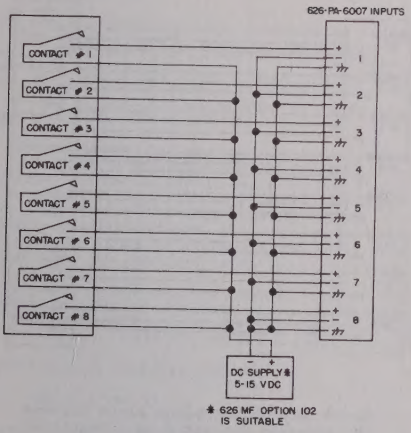
5.2 Circuit Applications



Connection to Relay Contacts (Separate Contact Supply Required)

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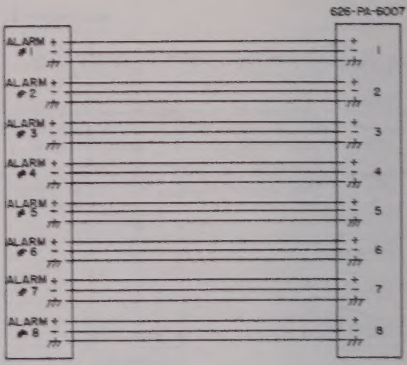

Connection to Backplane Alarm Signals
(No Separate Contact Supply Required)

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6 OPERATING THE 6007

6.1 Operational Description

The 6007 records and prints out any change of state of any of its eight inputs. Inputs can be programmed to be "normally closed" (or "high" or "on") or "normally open" (or "low or "off"), in accordance with the application. Minimum validation time is also program selectable to 5 mSec, 10 mSec, 20 mSec or 320 mSec. Both input state and validation parameters are stored in CMOS Random Access Memory so they are maintained when the 626 is turned off.

When any input changes state, the change data and alarm/normal status of all the inputs are stored. Depending on the printout mode selected, the channel number, input number, alarm/normal status and time of change are printed out. The number of transitions to the alarm state is also stored and printed out during the data summary (along with present state). If a memory overflow occurs, only the transition count is updated. The transition count is stored in the short term accumulator and is printed out when the overflow condition is cleared.

There are three input terminals: +, -, and GND. Since the maximum common mode voltage is +200V DC, maximum inputs from ground are as follows: positive input = 200V DC, negative input = 197V DC; or positive input = -197V DC, negative input = -200V DC

The inputs actually change state as follows:

ON = 2.30V DC max
OFF = 1.80V DC min
Hysteresis = 0.10V DC min

6.2 Operating Controls and Indicators

The functions of the mainframe operating controls and indicators associated with the 6007 operation are described in Table 2. Figure 1 shows the typical front panel controls associated with the 6007. For a description of controls common to overall Model 626 operation, refer to Volume 1 of TM-106650U.

Table 2. 6007 Operating Controls

Item	Function
F SENS pushbutton	Used in interactive program to change minimum validation time.
SENS pushbutton	Used in interactive program to change polarity of input state(s).
DATA pushbutton	When depressed, produces data summary printout.

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4.3 Programming Procedure

Assume it is desired to program the minimum validation time of the eight input channels of a "AAA" to 10 mSec and the polarities (or states) of the eight inputs as follows:

Input Channel	1	2	3	4	5	6	7	8
Polarity	1	1	0	0	0	0	0	1

where 1 represents N.O. or on and 0 is N.C. or off

a. Set the FUNCTION switch to PROGRAM and depress the pushbutton (1-8) that corresponds to the slot position of the "AAA" plug-in to be programmed. As shown in the sample printout of figure 2, note that a program summary is printed, followed by prompt message #1. In the summary, minimum validation time is shown as 5 mSec and the polarity of each channel is shown as 0. Prompt message #1 permits the operator to change any or all polarities or the minimum validation time.

b. To reprogram polarity, respond to prompt message #1 by pressing the SENS pushbutton. This causes prompt message #2 to be generated. Now press 1 1 0 0 0 0 0 1 to update the polarities of the eight inputs.

c. Note that a new summary is now generated, followed by prompt message #1. Polarity is updated, but minimum validation time has not changed.

d. To reprogram minimum validation time, press F SENS. Note that prompt message #3 is printed. To change the minimum time to 10 mSec, press "0". At this time, another summary is printed, indicating that both polarity and minimum time have been corrected. Another prompt message #1 is also generated, enabling further changes to be made, if so desired.

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Figure 1. Typical Front Panel with 6007 Installed in Mainframe.

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```
TO CHANGE POLARITY
PRESS: 'SENS'
TO CHANGE MIN TIME
PRESS: 'F SENS'

P 1 1 0 0 0 0 0 1
# 1 2 3 4 5 6 7 8

MIN TIME=010 MSEC

     626-PA-6007
4 FOR 320 MSEC
3 FOR 20 MSEC
2 FOR 10 MSEC
1 FOR 5 MSEC
PRESS

TO CHANGE POLARITY
PRESS: 'SENS'
TO CHANGE MIN TIME
PRESS: 'F SENS'

P 1 1 0 0 0 0 0 1
# 1 2 3 4 5 6 7 8

MIN TIME=005 MSEC

     626-PA-6007
0 FOR N/O OR OFF
1 FOR N/C OR ON
ENTER 8 DIGITS

TO CHANGE POLARITY
PRESS: 'SENS'
TO CHANGE MIN TIME
PRESS: 'F SENS'

P 0 0 0 0 0 0 0 0
# 1 2 3 4 5 6 7 8

MIN TIME=005 MSEC

     626-PA-6007
        CH 2
PROGRAM SUMMARY

 PROGRAM MODE
```

Prompt message #1

Program summary #3

Prompt message #3

Prompt message #1

(Read Up)

Program summary #2

Prompt message #2

Prompt message #1

Program summary #1

Figure 2. Sample Programming Printout

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7 SELECTING THE FACTORY/OPTION 101 PRESET PROGRAM

NOTE: Custon Preset Option 101 allows the user to choose his/her own program for the PRESET function.

To select the program stored in non-volatile memory, set the FUNCTION switch to PROGRAM and depress the channel number desired. The last operator-set program will be printed out. Now depress the PRESET pushbutton to recall the factory-set program. Unless specially modified to customer requirements, the factory-set program for the 6007 is as follows:

```
TO CHANGE POLARITY
PRESS:  'SENS'
TO CHANGE MIN TIME
PRESS:  'F SENS'

P 0 0 0 0 0 0 0 0
# 1 2 3 4 5 6 7 8

MIN TIME=005 MSEC

   626-PA-6007

TO CHANGE POLARITY
PRESS: 'SENS'
TO CHANGE MIN TIME
PRESS: 'F SENS'

P 1 0 1 1 0 1 1 0
# 1 2 3 4 5 6 7 8

MIN TIME=020 MSEC

   626-PA-6007
      CH 4
PROGRAM SUMMARY

 PROGRAM MODE
```

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8 DESCRIPTION OF DATA PRINTOUTS

With the FUNCTION switch set to OPERATE, a change of state detected in any of the eight inputs to the 6007 produces a printout. A sample appears below:

```
2  #4  N  19:42:59.47
2  #4  A  19:42:59.42          ↑
2  #3  N  19:42:53.28          |   Read Up
2  #3  A  19:42:49.56
```

Each line defines the channel number (2, in this case), the input number (3 or 4), the state of that input and the time of the change.

If the change state activity increases to such a rate that a memory overflow condition occurs, the 6007 initiates a summary mode printout when the overflow interval ends. This printout indicates, for the example below, that 44 alarm "hits" were detected in input No. 8 during the overflow period. Note that for this summary, only those inputs that change are printed.

```
#8   0044   ALARM   HIT
                                  ↑
     626-PA-6007                  |   Read Up
        CH 2

     SUMMARY MODE
```

If the DATA pushbutton is depressed, a data summary is printed. For each input channel, the data summary indicates the number of transitions to the alarm state as well as the present state.

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```
#8   A   0015   ALR   HIT
#7   N   0003   ALR   HIT
#6   N   0000   ALR   HIT
#5   N   0003   ALR   HIT
#4   N   0007   ALR   HIT
#3   N   0002   ALR   HIT
#2   A   0004   ALR   HIT
#1   A   0006   ALR   HIT
```

↑ Read Up

626-PA-6007
CH2

10/17/83 19:40:07
DATA SUMMARY

When the PRINTOUT MODE switch is set to SYSTEM CHECK, board status is checked and a SYSTEM CHECK printout is produced. If the 6007 module is determined to be good, a SYSTEM CHECK printout such as the following is produced.

```
**************************

      BD OPERATIONAL
        626-PA-6007
          CH 1
   10/17/83    19:42:08

****SYSTEM CHECK ****
```

↑ (Read Up)

If an abnormal condition is detected, the line BD OPERATIONAL may be replaced by one of the following:

INTERRUPT ERROR
INPUT ERROR
DATA ERROR

SYSTEM CHECK cannot be activated if the 6007 is programmed to 320 mSec minimum validation time. Any error causes the board to be turned off until the error is corrected or unit is reset. The DATA SUMMARY will display "BD OFF" as well as the usual message. Note that the SYSTEM CHECK printout starts and ends with asterisks.

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To obtain a program summary of the plug-ins in the Model 626, set the FUNCTION switch to OPERATE and depress the PROG pushbutton. The following program summary was obtained with a single 6007 module installed in slot position 2.

```
P  1  1  Ø  Ø  Ø  Ø  Ø  1
#  1  2  3  4  5  6  7  8

MIN  TIME=Ø1Ø MSEC

   626-PA-6007                    ↑  (Read Up)
      CH 2                        |

1Ø/17/83   19:40:4Ø

 PROGRAM SUMMARY
```

9 ASSEMBLING CABLES FOR 626-PA-6007

To attach the wires to the pins provided in the accessory bag for use with the 626-PA-6007, AMP tool #90325-1 is recommended. If this tool is not available, the following procedure may be used instead.

1) Take the three conductor twisted pair of red, green and black 24 AWG wires and untwist the 2 inches at one end.

2) Strip the insulation back 1/2" ±1/16" and tin the wires.

3) Insert the wire into the pin until 1/8" of insulation is touching the pin (so edge of insulation is even with the first (outer) set of tabs.) Bend these tabs tightly over the insulated wire, one at a time, with a needle-nose pliers.

4) Bend the inner tabs tightly over the stripped wire, one at a time, with a needle-nose pliers.

5) Apply a soldering iron to the inner tab. After heating for several seconds, apply a small amount of rosin core solder to the point of contact. Let flow for several seconds and remove soldering iron. Do not heat too long or the insulation may melt.

6) Repeat for the remaining 2 wires in the group.

7) When the pin has cooled, insert the pins into the connectors provided as follows, until a click is felt.

a. Red wire into hole marked #1.
b. Black wire into hole marked #2.
c. Green wire into hole marked #3.

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10 626 MODULE CAPACITY

The 626 standard mainframe has an upper limit of the total load rating of the installed modules. The overall mainframe capacity is set at 20 units, and individual modules have load ratings as follows:

Plug-In	Load Rating
626-PA-6001	2 Units
626-PA-6001 With Extra Option Board	3 Units
626-PA-6002	2 Units
626-PA-6003	4 Units
626-PA-6006	2 Units
626-PA-6007	1 Unit
626-PA-6008	2 Units
626-PA-6009	4 Units
626-PA-6011	1 Unit
626-PA-6012	3 Units
626-PA-6014	1 Unit
626-PA-6015	4 Units

When selecting modules for installation in any mainframe, simply verify that the sum of the load ratings of the installed modules does not exceed 20.

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11 STANDARD ACCESSORIES

Part No	Quantity	Description
TM110280-1U	1	Operator's Manual
AMP 1-350352-9	8	Pin Housing Connectors
AMP 640545-1	24	Pin Contacts
110289	1	Instruction Decal

12 FACTORY REPAIR

When factory repair is desired, proceed as follows:

1. Contact the Dranetz Technologies Customer Service Department and obtain an Authorization Number.

   Phone: 201-287-3680; TWX: 710-997-9553

2. Fill out the Repair/Service Order enclosed in this manual and ship it with the equipment to the Customer Service Department.

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